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# TRANSFERABLE SKILLS FOLLOWING WAIS-II VERBAL COMPREHENSION INDEX

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## **Abstract**

In this document the results and the reflections brought about by the research for the standardization of the verbal comprehension index of Wechsler scale subtests for measuring adult intelligence, WAIS –III for the general population from 16 to 24 years for the city of La Plata, using the collective administration modality are reported. In this opportunity, the performance of 229 students from secondary school from 16 to 18 years, both genders, is being analyzed in the information subtest, as well as that of 155 university and non-university tertiary students from 19 to 24 years, both genders in the same subtest. The information subtest is of particular interest because of the implication of previous knowledges in the text comprehension and the personal transferable skills.

Given the responses, the analysis allow to make some observations a) there are no statistically significant differences between the individual and the collective administration, by gender and b) the average of correct responses for both age groups is the same but the score distribution shows a greater homogeneity in the group from 16 to 18 years.

**Key words:** WAIS III; verbal comprehension index; information; collective administration

## **Introduction**

The quick advance of knowledge and technology makes it increasingly difficult to keep young people and adult's curricula and constant training updated and in force. This makes it necessary to master certain skills called "personal transferable skills" (Watts, 1991) which make the acquisition of new knowledges easier. One of those transferable skills is the performance in the verbal and oral communication.

At present, the most common reasons for evaluating teenagers and adults are: the measurement of their cognitive potential, the decision making process related to the educational and vocational classification, obtaining clinical information, and developing interventions in these situations.

The evaluation field, and especially the intellectual evaluation field, has developed over the last two decades. New cognitive skills tests are being quickly developed while the old intelligence tests are being reviewed to fulfill the needs of the professionals who use them.

The rules for an intellectual functioning scale must be regularly updated since there is a true phenomenon of IQ score increase over time (Flynn, 1984). If the corresponding

updates were not performed, the average IQ score would gradually rise and would progressively produce a wrong chart on the performance of an individual, in relation to the expected score in the corresponding age group.

Given the experience of this research team on the standardization of J Raven's Progressive Matrices test 1 and the "Flynn's effect" verification 2 (2000- 2003), there was a need to make valid and up-to-date rules for the WAIS III 3 (Verbal Comprehension Index Subtests vocabulary, analogies and information) This subtests selection was in part done considering Doctor Raven's recommendation of applying the vocabulary test whenever the Progressive Matrices test was used. On the one hand, it must be pointed out that Mill Hill and Crichton's vocabulary scales 5 are not still adapted to our environment and on the other hand, Wechsler scales have shown to be a valuable evaluation tool for the Verbal Comprehension, which is one of the most important "transferable skills" in subject's education and qualification.

David Wechsler in 1944 defined intelligence as the "individual's ability to act with an objective, to think rationally and to proceed accurately in his environment". According to the author, intelligence is not just a global entity but an addition to the specific skills. It is worth mentioning that by the end of his career he believed that standardized tests were not enough to measure intelligence and he highlighted the importance of evaluating the additional components of intellectual functioning, including socio-educational experiences, volition, ambition and type of personality.

The update of the WAIS-R scale made it posible to consider different factors in the WAIS III (1997) such as:

Inclusion of the Factorial Index scores

- Age range enlargement (up to 89 years) with the consequent decrease of performance important with time.
- Modification of the traditional tests content and graphics update.
- New subtests incorporation In the case of the Verbal scale a test is included to evaluate the memory work and the attention (numbers and letters ordering) and in the performance scale the reasoning with matrices test (that measures the abstract and fluid reasoning) was added as well as the searching symbols' subtest to jointly examine with clues, the processing speed.
- Change of order during the test, unlike previous versions, in this one it is recommended that the verbal scale test must be alternated with those of the performance one.

WAIS III test as its previous versions makes it possible to group subtests in a verbal and performance scale but it also allows for another kind of grouping based on more

specific cognitive functioning domains with which verbal comprehension indexes, perceptual organization, operating memory and processing speed can be obtained.

**Verbal comprehension index** refers to the conceptualization, knowledge and verbal expression; the individual must answer questions for measuring practical knowledges, word meaning, reasoning and the ability to express ideas with words.

**Memory work index** refers to the numerical capability and the sequential process, individuals must react to oral stimula such as using numbers or letters in a progressive and sequential process and requires an intensified attention to be successful.

**Perceptive organization index** evaluates non verbal thinking and visulmotor coordination, visual stimula must be integrated, reasoning non verbally and applying visual-spatial and visual-motor skills to solve problems not learned at school.

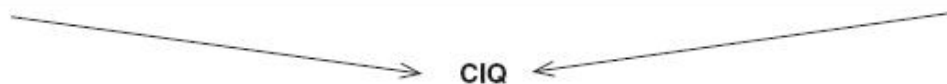
**Processing speed index** measures the quickness of response; extreme quickness to solve a series of non verbal problems must be shown.

WAIS III scale contains 13 subtests (plus an optional one -a puzzle) that facilitates the IQ calculation for the Complete scale, Verbal IQ, performance IQ and the abovementioned indexes.

For the calculation of the CIQ, VIQ and PIQ the administration of 11 out of the 14 subtests is needed as well as for obtaining the different indexes. It is worth pointing out that the comprehension subtest as well as that of story ordering and puzzle subtest are not included in the indexes calculations.

**Figure 1.** WAIS III subtests' distribution on IQ and indexes

VIQ			PIQ		
<i>Scale Verbal</i>	<i>Verbal Comprehension index</i>	<i>Operating memory</i>	<i>Perceptual organization</i>	<i>Processing speed</i>	<i>Performance scale</i>
Vocabulary	Vocabulary		Tables completion		Tables completion
Analogies	Analogies			Digits Symbols Codification	Digits Symbols Codification
Arythmetics		Arythmetics	Cube design		Cube design
Digits		Digits	Matrixes reasoning		Matrixes reasoning
Information	Information				sheets ordering
Comprehension				Symbols Searching	Symbols searching
Numbers-letters ordering		Numbers-letters ordering			Puzzles (optional)



During the Wais III production, a thorough factorial analysis has been done, which allowed defining which subtests have more “g” factor saturation. In the case of the verbal scale, we are dealing with vocabulary and information tests and in that of the performance scale, with those of block designs and matrices.

Using the same method it was observed that the three variables are enough to delimitate a factor, thus it was decided to use the vocabulary, analogies and information subtests to determine the verbal comprehension index, to rule out the verbal comprehension subtest because of its evaluation complexity.

In relation to the verbal comprehension index, the included subtests enable to measure crystallized intelligence although it is worth making it clear that the similarity subtest also evaluates the fluid intelligence. In this case it is useful to remember Horn and Cattell (1978)’s fluid and crystallized intelligence theory. They have separated those two factors. A person’s learning depends on the acquired knowledges at school, and culture is classified as crystallized, including the capability of using the accumulated general information to make judgments and solve problems. Fluid intelligence reflects the individual’s capability to solve new problems that do not depend on schooling or on the formal culture, it is the kind of intelligence used for tasks such as discovering the

relationship between two elements or different concepts, making a concept, reasoning, abstracting.

Each subtest of the verbal comprehension index is defined in the following way:

Vocabulary contains a series of simple, verbal stimuli (isolated words that individuals must define).

Analogies given a series of words already introduced the candidate must explain the similarity between objects or the common concepts that those terms represent.

Information Perception of complex verbal stimuli that test what the candidate knows about events, objects, places and well-known people.

This document deals with the conclusions this team has reached as regards the subtests' collective administration which integrate the verbal comprehension index and the information subtest will be specifically analyzed

## **Methodology**

Wechsler's Adult Intelligence scale, third edition (WAIS III), whose adaptation to our environment has been published by the Paidós publishing house, July 2002 allows us to deal with the standardization work of the subtests included in the verbal comprehension index for the city of La Plata, Argentina.

Given the time spent on the individual administration, an investigation was carried out to define the possibility of administering collectively the corresponding subtests to the already mentioned index

For the pilot study a sample of 25 cases was selected, integrated by individuals from 19 to 20 years, both genders, with completed secondary studies living in the city of La Plata, to which the subtests were individually administered following the administration rules established by the author.

Likewise, another sample of similar characteristics was selected, being the same 25-individual population to whom the test was collectively administered, without time limit. The individuals answered in writing in protocols designed ad hoc.

Once the protocols were evaluated, the reliability on the results obtained was proved in the collective administration, which according to Cohen and Swerdlik refers to the consistency attribute in the measuring. Thus a test of halves was selected and considering that the items have an increasing difficulty, the half even and half uneven reliability was used. The result of the three subtests jointly was  $r: 0.875$  and for the halves division reliability adjustment, Spearman Brown's general formula indicated 0,90.

When analyzing the results of both samples, there were no significant differences between the two administration ways.

In order to standardize the subtests included in the verbal comprehension index, a sample whose candidates were grouped by age from 16-18 and 19-24 years, both genders, having gone to school, living in the city of La Plata and influential areas.

The administration of the three subtests had the following characteristics:

- The application was collective (in small groups) as in the pilot sample.
- The protocol adjustment used the resolution instruction for each test so that each individual would answer in writing.
- Individuals had the possibility to answer all the items, regardless of the mistakes that could be made.
- The subtests administration was done without a time limit and with the presence of the administrator.

For this presentation the information subtest was selected to evaluate the general knowledges on events, objects, places and ordinary people. This subtest shows the information magnitude that people have and mobilizes many knowledges on general events about the world. Other reasons for the selection of this subtest is that in itself it constitutes an adequate measurement of “g”(Kaufman, 1994).

For the ages from 16 to 18 years, five educational institutions were selected, respecting the population structure of students of high school education, looking for the greatest importance.

The group was integrated by 229 students distributed by gender in the following way. 100 women and 129 men.

For ages from 19 to 24 years, the group was integrated by 155 university students and non-university tertiary students.

## Results

For the group from 16 to 18 years, the results were analyzed descriptively in a general way, by gender and by educational institution.

The general average of correct responses in this group is 14.51 (the maximum possible score being 28), with a DS of 3.73 and a range from 4 to 24. (Tables 1 and 2)

**Table 1.** Results distribution according to the institution (16 to 18 years)

<i>Institution</i>	<i>Average</i>	<i>Deviation</i>	<i>Range</i>
UNLP dependent	16,51	3,89	9 to 24
Technical	14,28	3,33	4 to 21
Private laic	15,57	2,91	11 to 21
Urban public	15,48	3,15	7 to 24
Suburban public	10,4	2,51	6 to 16

**Table 2.** Results distribution by gender (16 to 18 years)

<i>Gender</i>	<i>Average</i>	<i>Deviation</i>	<i>Range</i>
Female	14,37	3,74	6 to 24
Male	14,53	3,78	4 to 22

For the group from 19 to 24 years, the average of correct responses is 14.51 with a DS of 4.03 and a range of 6 to 25. The results are generally analyzed in a descriptive way by gender and by course of study. (Tables 3 and 4)

**Table 3.** Results distribution by course of study (19 to 24 years)

<i>Carrera</i>	<i>Average</i>	<i>Deviation</i>	<i>Range</i>
Psicología UNLP	14,51	4,03	6 to 25
Educación Física UNLP	14,19	3,7	7 to 20
Fonoaudiología	14,38	4.1	8 to 20

**Table 4.** Results distribution by gender (19 to 24 years)

<i>Gender</i>	<i>Average</i>	<i>Deviation</i>	<i>Range</i>
Female	14,44	4,03	6 to 23
Male	14,51	4,03	10 to 25

## Conclusions

There are no significant differences as regards gender in the performance of both groups. Similarly, the averages are the same in both age groups (A 14.51) with a more homogeneous distribution in the ages from 16 to 18 years. One of the possible explanations of these results would be related, on the one hand to the knowledges evaluated in this test, which refer to the knowledge from the systematic education of this group of students. On the other hand, it is related to the way of studying of some



students, based on the quickness of knowlwdges, that si to say that simply seem to remember the one just learned.

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